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To Dan Meyer/R10/USEPA/US@EPA
cc <Susan.Childs@shell.com>, <rsteen@airsci.com>,
<smathiascheck@pattonboggs.com>
bcc

Subject Thrustmaster HPU Control System

History:  This message has been replied to.

Dan,
Per Rodger Steen's request, I am emailing you concerning the use of the Thrustmaster HPU's to power the air compressors while drilling the Mud Line Cellar (MLC) in our upcoming drilling operations. Hydraulically powered air compressors, rather than three diesel-powered units, were selected for use on the Kulluk to take advantage of the existing hydraulic power that could be developed by the Thrustmaster HPU's, thereby saving deck space and weight. The Thrustmaster HPU's have been fabricated and piped so that either the port or the starboard unit can power the air compressors. This setup results in a redundant source of power for the compressor units, should it be required. At no time will both Thrustmaster HPU units be running simultaneously to power the compressors.

As Technical Operations Advisor for the Beaufort Sea Exploration Drilling project, I am committing SOI to installation of a control system that will mechanically or electronically lock out one Kulluk Thrustmaster HPU during drilling operations. Our current expectation is to install the system that is proposed on the attachment this summer before the rig is mobilized into the Alaskan Beaufort. If you need any additional information regarding this lock-out system, please e-mail Rodger Steen or me. Thanks for your continued effort in addressing all these details early.

<<Electrical control of hydraulically driven Air Compressors on board the Kulluk.ZIP>>

***** ATTACHMENT NOT DELIVERED *****

This Email message contained an attachment named
Electrical control of hydraulically driven Air Compressors on board the
Kulluk.ZIP
which may be a computer program. This attached computer program could
contain a computer virus which could cause harm to EPA's computers,
network, and data. The attachment has been deleted.

This was done to limit the distribution of computer viruses introduced
into the EPA network. EPA is deleting all computer program attachments
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If the message sender is known and the attachment was legitimate, you
should contact the sender and request that they rename the file name
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For further information, please contact the EPA Call Center at
(866) 411-4EPA (4372). The TDD number is (866) 489-4900.

***** ATTACHMENT NOT DELIVERED *****

8 Jan. 2008

Electrical control of hydraulically driven Air Compressors on board the Kulluk.

The only way to shut down the three Air Compressors for the air lift system is to stop the flow of hydraulic fluid to the hydraulic motors.

As the hydraulic fluid can be supplied from either Thrustmaster HPU we propose the following control circuit scenario:

An existing selector switch will toggle between operating the Thrusters or the Air Compressors.

When the Thrusters operation is selected, both HPU's can be operated at the same time and the shut down switches associated with the air compressors will be eliminated from the circuit through switch blocks and/or relays added to the existing selector switch.

When the Air Compressor operation is selected only one HPU can be operated at the time. This will be controlled through interlocking relays so when either HPU is started the other HPU is automatically locked out.

A new selector switch determines which of the two HPU's is lead and lag.

Each of the compressors will have two temperature shut downs and one emergency shutdown. All shutdown switches will be in series so in the event of a failure the selected lead HPU will shut down and the fault will have to be isolated before either of the HPU's can be re-started.

We have discussed the option of controlling the compressors individually by de-stroking the hydraulic pumps individually. However, considering the short amount of potential operating time for each MLC operation (16-24 Hrs.) and the unlikely event of a Compressor failure during that time we are deeming the above control system as the most practical. The control of individual pumps would be very complex with either one of two HPU's supplying the hydraulic flow.

Kind Regards

CPE, MLC team

Per Andersen